Descriptions and illustrations of some new and poorly known turrids of the tropical northwestern Atlantic. Part 1. Genera *Buchema* Corea, 1934 and *Miraclathurella* Woodring, 1928 (Gastropoda: Turridae: Crassispirinae)

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ABSTRACT

Descriptions and illustrations are presented for four small, less than 12 mm in length, crassispirine turrids from the southeastern Caribbean, three in the genus *Buchema* Corea, 1934 and one in *Miraclathurella* Woodring, 1928. One of the three *Buchema* is described for the first time. The other two, *Buchema bellula* (E.A. Smith, 1882) and *Buchema primula* (Melvill, 1923), are redescribed because they are relatively unknown, and lack published photographs and adequate description. Their identification is compounded by the existence of a hitherto undescribed small *Buchema* that is similar in appearance, *Buchema nigra* new species, and by similar looking small *Crassispira* in the subgenus *Monilispira* Bartsch and Rehder, 1939 that will be addressed in a later paper. The fourth small crassispirine, *Miraclathurella peggywilliamsae* new species, is only the second known member presently placed in this genus in the tropical northwestern Atlantic. Variation in form of the four species is described.

Additional keywords: Taxonomy, systematics, new species, gastropods, Neogastropoda, western Atlantic

INTRODUCTION

This is the first in a series of papers covering small crassispirine turrids. Turrids are among the least understood of the tropical northwestern Atlantic (TNWA) mollusks for a number of reasons. They are very speciose, small, scarce, and for some, incompletely described by their original authors. Relative inaccessibility of types, such as those deposited in the British Museum of Natural History, has contributed to their anonymity. The focus of this part of the series is primarily on the genus *Buchema* Corea, 1934, most of whose members are poorly known. Scarce reports of *Buchema* in the literature offer little additional new descriptive or biogeographic information beyond what is given in the original descriptions. Reports in which *Buchema* have appeared include surveys (Altena, 1975; Olsson and McGinty, 1958; Ekdale, 1974; Absalão et al., 2005), and identification guides (Warmke and Abbott, 1961; Abbott, 1974; Rios, 1975, 1985, 1994, 2009; Humfrey, 1975; Kaicher, 1984; Díaz and Puyana, 1994; Williams, 2005, 2006, 2009). Maes (1983) published new information about *Buchema interstrigata* (E.A. Smith, 1882), for a population in a shallow water community at White Island, British Virgin Islands, and described differences between this species and *Buchema interpleura* (Dall and Simpson, 1901). These two larger, better known species are not treated in this work. Instead two smaller, little known ones, *Buchema bellula* (E.A. Smith, 1882) and *Buchema primula* (Melvill, 1923), are re-described. *Buchema bellula* was collected as early as 1964 (based on data labels of specimens at the Academy of Natural Science of Philadelphia). More recently, it has been found by diver-collectors multiple times, and sufficient material has become available to improve its description, describe its variability, and better illustrate the species. *Buchema primula* is very close in appearance to *B. bellula* and similar to another small species described here for the first time, *Buchema nigra* new species. These two species, *B. primula* and *B. nigra*, have also been found in multiple locations by different explorers. Another two, very similar but as yet undescribed *Buchema*, will be mentioned and illustrated, although not fully described because of insufficient specimens. The species treated here share important characteristics of the genus *Buchema*, in addition to the characteristics of the subfamily. Discussing them together here will better illustrate these shared characteristics but also their individual uniqueness.

The last species described in this paper, a Recent species, is a member of the genus-group *Miraclathurella* Woodring, 1928, which was erected for fossil species from the Bowden Formation of Jamaica. It is similar in some basic sculptural elements and overall appearance to small *Buchema*, so is included here for comparison purposes. It has also been taken from several different localities to allow a fair picture of its variability and distribution.

Species are treated systematically, including known synonyms, description, range, distinguishing characteristics, and variability.

MATERIALS AND METHODS

The literature of TNWA crassispirines was reviewed for descriptions, synonymy, and reported occurrences. A list of reported localities was developed for previously described species using published sources and data slips of museum lots.

Specimens for study were acquired from personal sampling trips, private collections, and from commercial dealers. In all cases, only the shell is used for identification and descriptive purposes. To supplement personally acquired material, museums lots were examined to gain a better understanding of a species variability and to identify characters that are consistent within and best distinguish it from other species. Collections in the National Museum of Natural History (USNM), Washington DC, and the Academy of Natural Science of Philadelphia (ANSP) were examined. Specimens of previously described species were compared to type material located at the British Museum of Natural History (BMNH).

Measurements of overall shell dimensions were taken to the nearest 0.1 mm employing an ocular micrometer mounted in a Bausch & Lomb stereo binocular dissecting microscope. Photographs of all species were taken employing a stand-mounted Nikon® D-90 digital camera with an AF-S VR Micro-Nikkor 105 mm f/2.8G macro lens fitted with one or more extension tubes (12, 20, or 36 mm) to obtain the largest image. Light was provided by the Nikon close-up remote kit with dual remote speedlights attached to a front-mounted ring. Individual specimen photos were cropped and sized appropriately for the plates using Adobe® Photoshop® CS2 computer software.

Types and voucher specimens originally in the possession of the author have been deposited in the ANSP, The Bailey Matthews Shell Museum (BMSM), Florida Museum of Natural History (FLMNH), and USNM. Catalog numbers are given in the text. A few paratypes remain in private collections for deposition elsewhere at a later time. Saint Vincent and the Grenadines is herein abbreviated SVG.

SYSTEMATICS

Subfamily Crassispirinae McLean, 1971

Remarks: The characteristics common to members of this subfamily are the presence of a well developed parietal callus adjoining the anal sinus, a subsutural cord, sulcus with microscopic growth lines and occasionally with one or two spiral threads, a smooth protoconch with fine axials on about the last 0.25–0.5 whorl, and a teleoconch sculptured with axial ribs and spiral cords (McLean, 1971: 119). These characteristics are all present to a greater or lesser degree in genera within this large subfamily.

Genus *Buchema* Corea, 1934

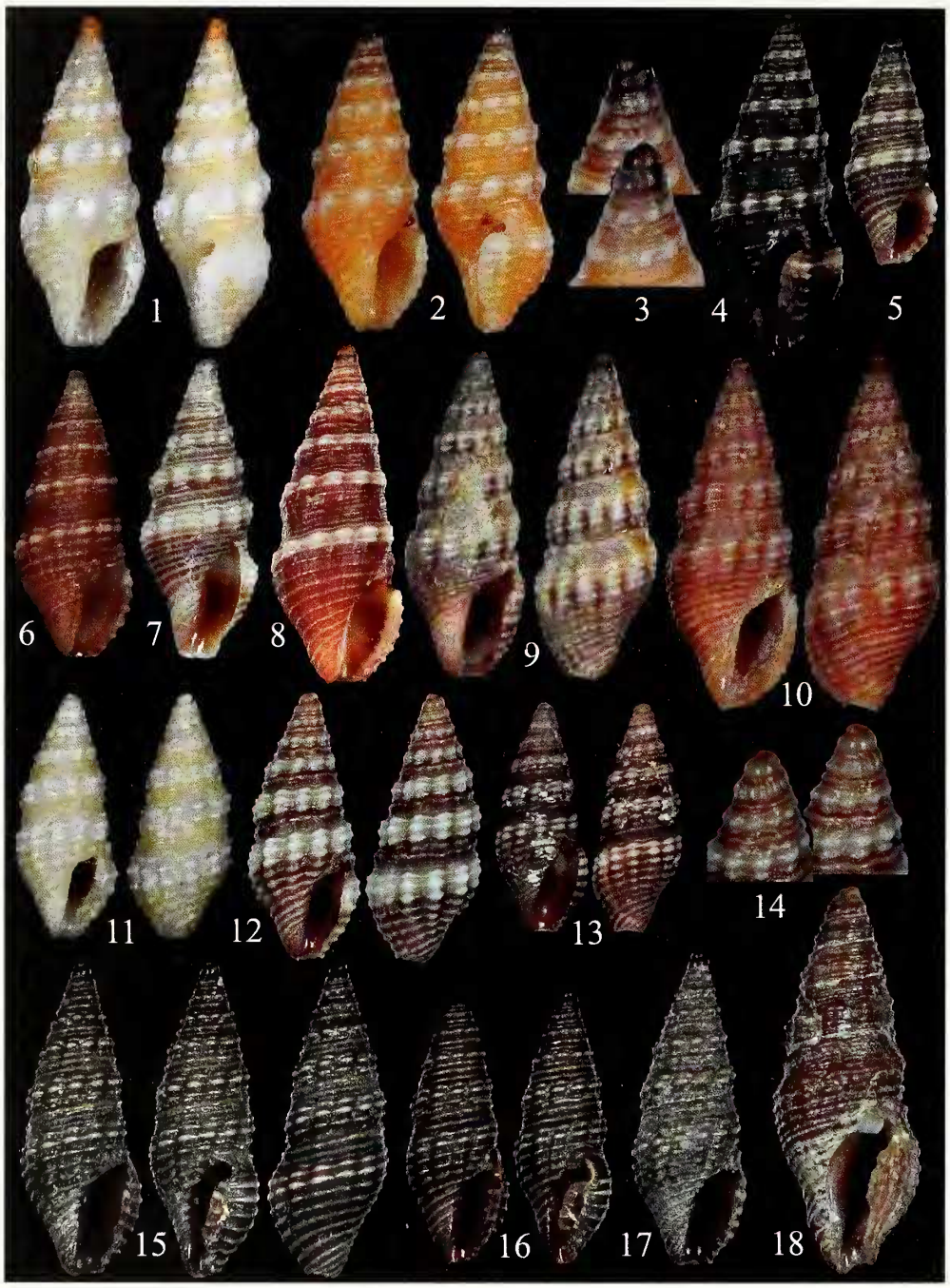
Type Species: *Buchema tainoa* Corea, 1934, by original designation

Remarks: Corea (1934: 1–2) erected *Buchema* for *Carinodrillia*-like species that, among other differences, lacked a median carina on the nuclear whorls, had strong axial ribs with overriding heavy spiral cords, and with fine threads between the cords. In addition, she stated that *Buchema* have hair-like incremental lines that create a "cloth-like pattern, while their junction sometimes almost appears granulose." Not all species placed by subsequent workers in the genus have the spiral threads between cords, or visible growth lines, but the other characteristics are found consistently in the group members. The small *Buchema* are similar in appearance to the *Crassispira* subgenus *Monilispira* Bartsch and Rehder, 1939. They differ from the *Monilispira* in lacking beaded spiral cords on the whorl periphery and shell base. Plain cords, or cords with swellings on rib crests, not rounded beads, are present instead. Another distinguishing characteristic, although not unique to *Buchema*, is the location of the subsutural cord, which is usually very near the suture, not positioned well into the sulcus as in some of the other subgenera within *Crassispira*.

Buchema bellula (E.A. Smith, 1882)
(Figures 1–8)

Pleurotoma (*Clavus*) *bellula* E.A. Smith, 1882: 209–210.
Pleurotoma bellula E.A. Smith, 1882: Paetel (1888).
Drillia (*Clavus*) *bellula* (E.A. Smith, 1882): Tryon (1884: 191).
Buchema bellula (E.A. Smith, 1882): Maes (unpublished, from specimen labels ANSP 299773 and ANSP 297289, dated 9 Oct 1981); Williams (2006, 2009: number 3007, left, photographs of holotype only).
Not *Buchema bellula* (E.A. Smith, 1882): Williams (2005: number 3007, both photographs); Williams (2006, 2009: number 3007, right, 2 photographs only).
Sedilia melanacme (E.A. Smith, 1882): Fallon (2008: 12, 13, figs. 25a, b) (non E.A. Smith, 1882.)

Description: Shell 8.5 × 3.4 mm (holotype), fusiform, anterior portion truncated, consisting of ~8 whorls; color a faded pale yellow, except for the primary and secondary spiral cords, which are white to dingy white (Figure 1). Protoconch light brown, of 2 smooth whorls, bulbous but not wider than the first teleoconch whorl; tip partially immersed so that the first whorl is slightly tilted relative to the shell axis. Although not visible in the holotype because of wear, younger, less worn specimens, have fine axial riblets on the last 0.5 whorl (Figure 3). Teleoconch of ~6 whorls, whorls 4 and 5 with 7 primary and secondary cords: a subsutural cord, 3 secondary spiral cords in the sulcus, 2 primary cords on the whorls'



Figures 1–18. *Buchema* species. **1–8.** *Buchema bellula* (E.A. Smith, 1882), **1.** Holotype BM(NH) 1964223, St. Vincent, West Indies, 8.5 × 3.4 mm. Photo digitally enhanced (contrast and brightness) to show color pattern. **2.** ANSP 424360, Clifton Harbor, Union I., SVG, 8.1 × 3.4 mm. **3.** Same specimen as 2, enlarged views of protoconch. **4.** ANSP 424359, Corbec Bay, Canouan I., SVG, 8.9 × 3.6 mm. **5.** ANSP 355800, Grenada, 5.9 × 2.4 mm. **6.** ANSP 296638, E side of Prickly Pt., SW Grenada, 7.5 mm. **7.** ANSP 297289, mouth of St. George Harbor, W Grenada, 7.8 × 3.0 mm. **8.** USNM 1139712, Clifton Harbor, Union I., SVG, 8.9 × 3.5 mm. **9.** *Buchema melanacme* (E.A. Smith, 1882), holotype BM(NH) 1998116, St. Vincent, West Indies, 8.5 × 3.3 mm. **10.** *Buchema* aff. *bellula* (E.A. Smith, 1882), author's collection, Calliaqua Bay, St. Vincent I., SVG, 9.2 × 3.5 mm. **11–14.** *Buchema primula* (Melvill, 1923), **11.** Holotype BM(NH) 1982080, Cuba, 6.3 × 2.7 mm. Digitally enhanced as Figure 1. **12.** USNM 1139713, Annas Shoal, Grenada, 7.0 × 3.0 mm. **13.** ANSP 424362, E side of Prickly Pt., SW Grenada, 5.9 mm. **14.** Same specimen as 12, enlarged views of the protoconch. **Figures 15–17.** *Buchema nigra*, new species. **15.** Holotype USNM 1139714, Petit Nevis, SVG, 8.2 × 3.0 mm. **16.** Paratype, Peggy Williams coll., Man of War Bay, Tobago I., Trinidad and Tobago, 7.2 × 2.7 mm. **17.** Paratype ANSP 424361, Annas Shoal, Grenada, 8.1 × 3.0 mm. **18.** *Buchema* aff. *nigra*, author's collection, off Arraial do Cabo, Rio de Janeiro state, Brazil, 10.0 × 3.8 mm (missing protoconch).

periphery swollen at rib crests and appearing as rows of elongate beads, and 1 secondary cord below. Body whorl has an additional 4 secondary spiral cords on the shell base, and 4 more that encircle the anterior canal. Tightly packed spiral threads, ~3–10 in number, lie between the cords, the greater number between the cords of the body whorl where they are spaced further apart; 2 threads lie between the edge of the suture and subsutural cord on later whorls. Sulcus flat; sculpture as stated before with secondary spiral cords and threads; growth striae not readily evident, but faint where seen. Ribs number 10 on the penultimate and 8 to the varix on the body whorl, very short, only obvious at the whorl periphery, reduced to slight swellings above and below the peripheral cords. Aperture widest medially; anal sinus deep and rounded posteriorly, but not constricted at the entrance, or only very slightly so in mature specimens. Varix a distinct hump behind the anal sinus; outer lip thin with 2 irregular narrow axials near its edge, and scalloped by the ends of spiral cords; with a shallow stromboid notch. Inner lip thin, lies along the columella and parietal wall; a callus at its junction with the outer lip forms the parietal wall side of the anal sinus.

Type: Holotype BM(NH) 1964223.

Type locality: St. Vincent, West Indies.

Other Material Examined: Four spec., worn, at 30 ft [9.1 m] on sand, shell and coral, 1/8 mi [0.2 km] W of Ft. George, St. George, Grenada, (ANSP 296915); 3 spec., 5.7, 7.5, and 8.2 mm (broken tip), at 0–0.9 m, in *Thalassia*, sand coral rock, E side of Prickly Pt., SW Grenada, coll. by R. Ostheimer, Jan–Feb 1964 (ANSP 296638); 1 spec., 5.9 × 2.4 mm, Grenada, coll. by Cosman (ANSP 355800); 1 spec., 7.8 × 3.0 mm, at 7.3–11.0 m, trash, coral rubble, mud, mouth of St. George Harbor, W. Grenada (ANSP 297289); 1 spec., 2.6 mm juvenile, at 7.3 m, in sand, fine grass, 500 yds [457 m] off fish market, W of St. George, Grenada, coll. by R. Ostheimer, 12 Feb 1964 (ANSP 299787); 1 spec., 4.6 mm juvenile, at 3.7 m, in sand, mud, coral rubble, lagoon channel, St. George Harbor, Grenada, coll. by R. Ostheimer, 8 Jan 1964 (ANSP 297412); 1 spec., 7.9 × 3.0 mm, at 12.2–15.2 m, Carriacou I., Grenada, coll. by T. McCleery May 2004 (author's coll.); 6 spec., 8.7 × 3.5, 9.0 × 3.7 (both USNM 1139710), 8.6 × 3.3 (BMSM 17964), 6.7 × 2.9, 6.2 × 2.5 (both UF 441321), and 8.9 × 3.6 mm (ANSP 424359), at 7.6 m, on rock and sand, Corbec Bay, Canouan I., SVG, coll. by G. Mackintosh 8, 9 Jun 2004; 15 spec., 8.1 × 3.4 (ANSP 424360), 8.3 × 3.5, 6.7 × 2.8 (both USNM 1139711), 8.8 × 3.6, 6.5 × 2.8 (both UF 441320), 6.5 × 2.9, 5.9 × 2.7 (both BMSM 17965), 6.1 × 2.6, 5.7 × 2.5 (both P. Williams coll.), 6.7 × 2.9, 6.1 × 2.6, 7.8 × 3.2, 8.8 × 3.7, 6.3 × 2.7 and 7.8 × 3.5 mm (missing protoconch, anthor's coll.), at 10.7 m, Clifton Harbor, Union I., SVG, coll. by G. Mackintosh 30 May 2004; 7 spec. 9.9 × 4.0, 9.2 × 3.5, 9.3 × 3.9, 9.6 × 3.8, 8.2 × 3.5 (broken apex), 6.0 × 2.4, and 5.8 × 2.5 mm, at 10.7 m, Chatham Bay, Union I., SVG, coll. by G. Mackintosh, 8 Apr 2007 (author's coll.); 1 spec., 11.1 × 4.5 mm, at 8 m, Green I., Grenada, coll. by G. Mackintosh, 1 Nov 2003 (author's coll.); 1 spec., 7.4 × 2.9 mm, at 10.7 m, Saline I., Grenada, coll. by G. Mackintosh, 1 Feb 1997 (author's coll.); and 1 spec., 8.9 × 3.5 mm (USNM 1139712), and 207 others, intertidal, crabbed, Clifton Harbor, Union I., SVG, coll by P. Fallon, 16 Jun 2007 (author's collection).

Distribution: SVG (Canouan I., Union I.) and Grenada (Grenada I., Carriacou I., Green I., Saline I.).

Remarks: This species clearly has the characteristics of *Buchema*, with heavy spiral cords overriding the ribs and spiral threads in between. It is virtually unknown because the original description by Smith in 1882 was not illustrated, and until now this remained the only description of the species. Virginia O. Maes identified several lots in the ANSP collected in Grenada as this species, and she was likely the first to place it in the genus *Buchema*, (unpublished, based on information from specimen labels ANSP 299773 and ANSP 297289, dated 9 Oct 1981). Williams (2006: number 3007) was the first to publish a photograph of the holotype.

The largest specimen examined had a length of 11.1 mm. Color seems to vary among local populations; shallow water specimens taken on Union I., SVG, are brown (Figure 8), while gold-colored specimens, probably the holotype's original color, have been found at 10.7 m in Clifton Harbor, also Union I. (Figure 2). The black form has been taken at 5.5–7.6 m in Chatham Bay, Union I., at Canouan I., SVG (Figure 4), and from Grenada at unknown depth (Figure 5). None of these color forms have been found to have differences that might suggest a separate species.

Other characters are variable in *B. bellula*. The number of ribs and spiral cords vary from 10 to 12 ribs and 5 to 10 spiral cords on the penultimate whorl among the specimens examined. There can be as few as 1 or as many as 4 primary cords (Grenadian specimens (Figures 6 and 7). Shallow water Union I. specimens were quite uniform in having 2 (Figure 8). The number of spirals on the last whorl varies from 13 to 25.

Buchema bellula is easily recognized by the regularly spaced, smooth, fine light-colored spiral cords (the secondary spirals) spaced along the entire length of the shell, and by the 1–4 primary white cords swollen at the crests of broad, short ribs that are mostly limited to the whorls periphery. It is most similar to *Buchema primula* (Melvill, 1923); see the remarks under that species for differences. *Buchema melanacme* (E.A. Smith, 1882) differs in having an excavated sulcus with well-marked growth striae and without secondary spiral cords, longer and more distinct ribs, and broken or slightly nodulose spirals on its base (Figure 9). Also, *B. melanacme* has patches of darker color between ribs, which contrasts with *B. bellula*'s uniform base color. *B. nigra*, new species is similar to the black form of *B. bellula*—see under *B. nigra* for a discussion of their differences.

An undescribed species, shown in Figure 10 and temporarily identified as *Buchema* aff. *bellula*, is larger, peripheral spirals only slightly swollen, and secondary spirals in the sulcus are lacking.

Buchema primula (Melvill, 1923)
(Figures 11–14)

Drillia primula Melvill, 1923: 166, pl. 4, fig. 9: Trew (1987: 58).
Buchema primula (Melvill, 1923): Williams (2005, 2006, 2009: number 3013).
Buchema bellula (E.A. Smith, 1882): Williams (2005, 2006, 2009: number 3007, only second photograph from right) (non E.A. Smith, 1882).

Description: Shell 6.3 × 2.7 mm (holotype), with ~7 whorls; fusiform, stout, anterior end truncated (Figure 11). Protoconch of ~2 worn whorls. On the fresh specimen shown in Figure 12, there are 1.5 regularly expanding, symmetrical, smooth whorls, followed by 0.5 whorl with 6 distinct, prominent, curved riblets; protoconch white on the holotype, light brown with a dark brown band next to the suture on the fresh specimen (Figure 14). Spiral sculpture consists of a subsutural and 3 other cords on the spire whorls, 2 swollen at the rib crests. Body whorl has 4 additional spiral cords on shell base, also swollen at the rib crests, and 4 plain spiral cords on the anterior canal. On the fresh specimen, the subsutural cord is offset from the suture by 1–3 distinct, packed spiral threads, and undulates with ribs that underlie the appressed suture. Spiral threads are present between the cords overall. Sulcus moderately wide, slightly excavated, with spiral threads throughout. Axial sculpture of 11 ribs on the penultimate and 9 to the varix on body whorl, where they evanesce on the shell base. Ribs about as broad as their interspaces. Outer lip broken on holotype; on fresh specimen lip thin, slightly scalloped by 8 spiral cords; weak stromboid notch present; anal sinus lies just below the subsutural cord, deep and rounded at its apex, sides slightly divergent. Varix lies behind the anal sinus, about the width of two swollen ribs. Inner lip thin, transparent, with a parietal lobe at its junction with the outer lip. Aperture narrow, ending in a short, open anterior canal. Shell color pale yellow, probably faded; fresh specimens examined are all dark brown, lighter near apex, with a white band spiral cords on the periphery.

Holotype: Holotype BM(NH) 1982080.

Type Locality: Cuba.

Other Material Examined: 1 spec., 7.0 × 3.0 mm, at 12 m, Annas Shoal, Grenada (USNM 1139713); 1 spec., 5.9 mm, at 0–0.9 m, in *Thalassia*, sand, coral rock, E side of Prickly Point, SW Grenada, coll. by R. Osthcimer (ANSP 424362); 1 spec., 6.6 × 2.5 mm, at 0.3–0.9 m, Prickly Bay, SW Grenada (ANSP 299773); 1 spec., 6.5 × 2.6 mm, from on coralline sand among dead coral at 11 m, Saline I., Grenada, coll. by G. Mackintosh, Feb 1997 (UF 441322); and 1 spec., 7.4 × 2.9 mm, on rock and sand at 7.6 m, Corbec Bay, Canouan I., SVG, coll. by G. Mackintosh, 8 Jun 2004 (BMSM 17966); 2 spec., 7.7 × 3.1 and 6.8 × 2.9 mm, at 5.5 m on silt-covered rocks, Corbec Bay, Canouan I., SVG, coll. by G. Mackintosh, 6 Dec 2006 (author's coll.).

Distribution: Unspecified type locality in Cuba; examined specimens are limited to SVG (Canouan I.) and Grenada (Saline I.). A specimen in Peggy Williams collection not examined (Williams, 2005: number 3007, second photo from right), is 6.5 × 2.5 mm, and was taken at 9 m, Canoe Bay, Grenada, coll. by G. Mackintosh, 20 Sep 1996 (Tippett, pers. observ.).

Remarks: *Buchema primula* has spiral cords overriding relatively broad ribs, with spiral threads in between the cords, characteristics of the genus. Intraspecific variation is seen in the number and degree of swelling of the peripheral white cords, and the whiteness of the cords. Cords are more swollen in the specimen depicted in Figure 12 than the one shown in Figure 13. Another specimen not shown, ANSP 299773, has only two white peripheral cords.

This species is most similar to and has been mistaken for *B. bellula* (Williams, 2005, 2006, 2009: number 3007, second photo from right). The confusion with *B. bellula* is understandable; only Smith's description has been available for study, and only recently has a photograph of the holotype of *B. bellula* been published (in Williams, 2006, 2009: number 3007, left photos). *Buchema bellula* has a different protoconch: dark glassy brown, almost black, of 2 smooth whorls, bulbous but not wider than the first teleoconch whorl, and with tip partially immersed so that the first whorl is slightly tilted relative to the shell's axis. This contrasts with the 2 regularly expanding, symmetrical, and smooth whorls of *B. primula* that bear axial riblets terminally (Figure 14). The teleoconch sculpture differs too. *B. primula* has a thicker subsutural cord, which undulates with the ribs that underlie the appressed suture; a narrower sulcus; typically 3 peripheral spiral cords (not 2) that are swollen where they cross the ribs, the swellings rounder or shorter, and the ribs narrower, with the interspaces about the same width; more pronounced and longer ribs on the body whorl; and fewer spiral cords on the body whorl.

Buchema nigra new species
(Figures 15–17)

Buchema bellula (E.A. Smith, 1882): Williams (2005, 2006, 2009: number 3007, rightmost photograph) (non E.A. Smith, 1882).

Description: Shell 8.2 × 3.0 mm (holotype), narrowly fusiform, truncated anteriorly; 7.5 whorls (Figure 15). Protoconch of 2.5 smooth glassy whorls, except the last 0.25 whorl with ~4 faint axial riblets; whorls dark brown, lighter mid-whorl. Teleoconch of 5 whorls; first whorl with 4 spiral cords, uppermost a subsutural cord slightly thicker than the second, third

is swollen where it overrides the ribs and forms the periphery of the shell, fourth lies next to the suture with the succeeding whorl and is very fine. Spiral cords increase to 6 on the penultimate whorl, the 3 peripheral ones are slightly swollen across the ribs. Subsutural cord heaviest and 2 in the sulcus, which is flat. Body whorl has a total of 15 spiral cords: 6 to the suture line as in the penultimate whorl, 4 more on shell base that are slightly swollen across the ribs, and 5 encircle the anterior canal. Distinct spiral threads are packed between the spiral cords, from about the third teleoconch whorl to the anterior canal. Ribs begin about midway in the sulcus and evanesce on shell base; number 11 to the varix on body whorl, 12 on penultimate; distance between the ribs less than the rib width. Varix lies close to the edge of the outer lip, just behind the anal sinus, and is broader and higher than the ribs. Outer lip thin, scalloped by the ends of spiral cords, and with a slight stromboid notch. Anal sinus u-shaped, shallow, slightly constricted on parietal side by callus; located just below subsutural cord. Inner lip narrow, appressed to the columella and parietal wall, terminating posteriorly at the parietal callus that forms the roof of the aperture. Aperture ovate, about 37% of the overall height of the shell, including the anterior canal, which is very short. Shell color very dark brown to black, spiral threads between the two peripheral cords, and between subsutural cord and suture are dark brown to black; spiral cords whitish; subsutural cord brown.

Types: Holotype USNM 1139714. Paratypes: 1 spec., 7.9 × 2.9 mm, at 40–50 m, Carriacou I., Grenada, coll. by T. McCleery, May 2004 (UF 441323); 1 spec., 7.2 × 2.8 mm, at 9.8 m, Petit Nevis, SVG, coll. by G. Mackintosh, 19 Aug 2000 (BMSM 17967); 1 spec., 7.4 × 3.2 mm, at 12.2 m, S end of Baliceaux I., SVG, coll. by G. Mackintosh, April 1997 (USNM 1139715); 1 spec., 8.1 × 3.0 mm, at 13.7 m, Annas Shoal, St. George, Grenada, coll. by G. Mackintosh, 4 Aug 1996 (ANSP 424361); 1 spec., 7.2 × 2.7 mm, at 3.7 m under rock, Man of War Bay, Tobago I., Trinidad and Tobago, coll. by G. Mackintosh, 11 Feb 1998 (P. Williams coll.).

Type Locality: Petit Nevis, St. Vincent and the Grenadines, in 8.5 m.

Distribution: SVG (Baliceaux I.; Petit Nevis); Grenada (Grenada I.; Carriacou I.); and Trinidad and Tobago (Tobago I.).

Remarks: This species has the characteristics of the genus *Buchema*, with spiral cords overriding relatively broad ribs, and spiral threads in between the cords. *B. nigra* is most similar to the black form of *B. bellula*, but its peripheral cords are less swollen on the rib crests, and it has a brown subsutural cord, which is white in *B. bellula*.

Unlike *B. bellula*, little variation is seen in specimens of *B. nigra* from different localities within its known range. The specimen from Man of War Bay, Tobago (Figure 16) is indistinguishable from the holotype (Petit Nevis, SVG), as is the specimen from Grenada (Figure 17). An undescribed species from off Arraial do Cabo, Rio de Janeiro state, Brazil (Figure 18), has similar sculpture but is larger and brown in color. Only this single imperfect specimen was available, so no further analysis was undertaken. The right-most photo in Williams (2009: number 4014), which is also from Brazil, may be this undescribed species.

Etymology: From the Latin adjective *niger*, meaning black (Oxford Latin Dictionary). This species is named for its characteristic color, which is a very dark brown to black in strong light under magnification, but decidedly black to the naked eye.

Genus *Miraclathurella* Woodring, 1928

Type Species: *Miraclathurella vittata* Woodring, 1928, by original designation. Miocene of Jamaica (Bowden Formation).

Remarks: Woodring (1928: 189) described members of this genus as being very slender, having 2.5–3.0 stout nuclear whorls with a few opisthocline axial riblets, a teleoconch with narrow, closely spaced axial ribs, narrow and more closely spaced on body whorl, overridden by strong spiral cords, and a sulcus with a strong subsutural cord. In addition they have a deep, round anal sinus, very long and narrow aperture, relatively long anterior canal, and a deep or relatively deep stromboid notch. The combination of characters that separate this group from both *Buchema* and *Crassispira* is a slender shell, narrow aperture, a relatively heavy varix close to the edge of the outer lip, a relatively long anterior canal, and a strong stromboid notch.

Miraclathurella peggywilliamsae new species
(Figures 19–22)

Miraclathurella ? .—Williams, 2005: number 9036.

Description: Shell with 8 slightly convex whorls (holotype), 10.3 × 3.6 mm, fusiform, slender, spire about 58% of overall shell height (Figure 19). Protoconch paucispiral, ~1.75 smooth whorls, except last 0.25 whorl with 4 fine axials; tip partially immersed, giving the shell apex the appearance of being flat-topped. The transition to the teleoconch is marked by the appearance of the subsutural cord and angular axial ribs. Teleoconch of 6.25 whorls bearing 3–5 spiral cords that are beaded at the intersection of axials on early whorls, becoming more elongated and less swollen on the body whorl, and then plain cords on the varix and outer lip. Four more beaded cords are present on the shell base; anterior canal with 8 rather plain spiral cords. Sulcus about a third the height of the whorl, slightly excavated, marked with arcuate incremental growth lines. Subsutural cord distinct, smooth, and located very close to the suture except on the last 2 whorls where it is slightly offset below. Finely granulose spiral threads, spaced about as far apart

as they are wide and variable in thickness, are present between the cords, in the sulcus, and a few between the subsutural cord and the summit of the last 2 whorls only. Axial ribs present but reduced in the anterior half of the sulcus, continue to shell base where they evanesce. Axial ribs are narrow with wide interspaces in early whorls, and low and broad with narrow interspaces on later whorls. Penultimate whorl has 23 axials; body whorl about 18 to the varix. Varix a thick swelling a short distance behind the edge of the outer lip. Outer lip thin and straight, running from the anal sinus to the small but distinct stromboid notch. A short axial is present near edge of outer lip. Anal sinus deep, its apex round, opening partially constricted by the parietal callus and projection of the outer lip. Aperture oval, joins a distinct, open anterior canal, which begins at the constriction imposed by the stromboid notch. Canal turned slightly to the right, viewed ventrally. Inner lip narrow, appressed to the columella and parietal wall its entire length. Roof of the aperture formed by the parietal callus that fills the junction of the inner and outer lips. Shell color a light golden yellow; 2 peripheral cords lighter still, almost white.

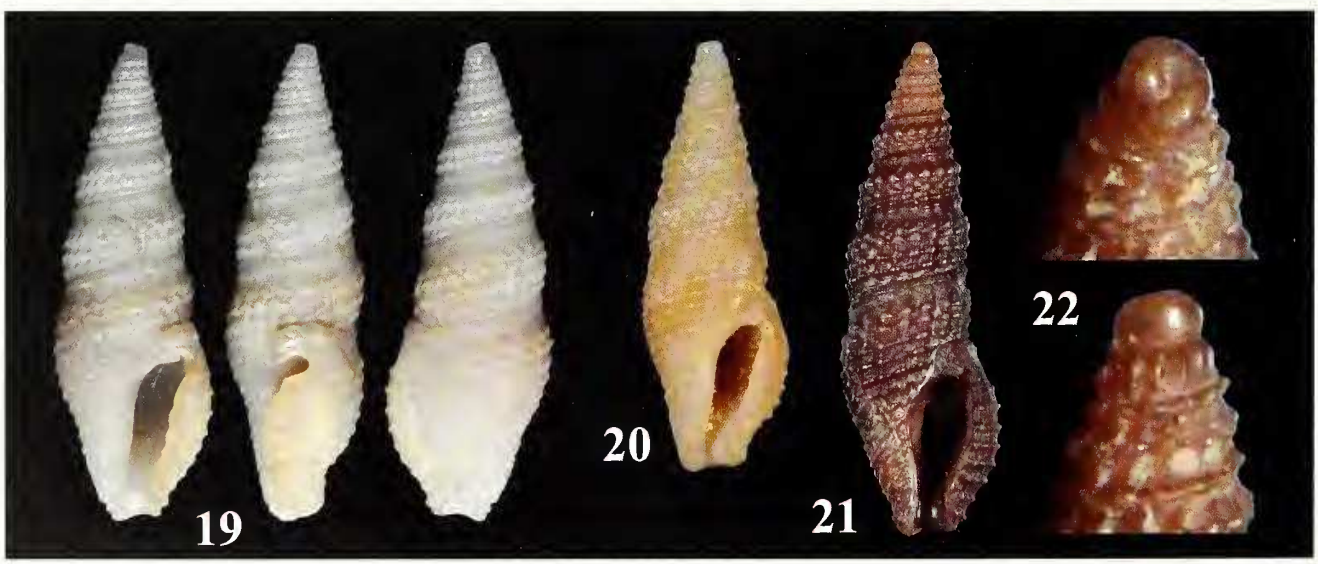
Types: Holotype USNM 1139716; Paratypes: 1 spec., 9.8 × 3.3 mm, at 7.6 m, St. Elair Pt., Friendship Bay, Bequia, SVG, coll. by G. Mackintosh, 30 Jul 1996 (UF 441324); 4 spec., 10.3 × 3.5, 10.1 × 3.7, 10.4 × 3.5 (missing protoconch), and 9.9 × 3.3 mm, at 12.2 m, S end of Baliceaux I., SVG, coll. by G. Mackintosh, 25 Apr 1997 (ANSP 424358); 1 spec., 9.7 × 3.5 mm, at 12.2 m, S end of Baliceaux I., SVG, coll. by G. Mackintosh, 23 Apr 1997 (BMSM 17968); 2 spec., 9.9 × 3.6 (missing protoconch) and 8.3 × 2.7 mm, at 10.7 m, Baliceaux I., SVG, coll. by G. Mackintosh, 24 Apr 1997 (P. Williams coll.); 1 spec., 9.2 × 3.1 mm, at 3.0 m, Glover I., Grenada, coll. by G. Mackintosh, 26 Nov 1996 (ANSP 424356); 1 spec., 10.2 × 3.8 mm (missing apex), at 6.7 m, Glover I., Grenada, coll. by G. Mackintosh, 4 Nov 1996 (P. Williams coll.); 1 spec., 9.4 × 3.5 mm (missing apex), at 9.1 m, Devil's Bay, Grenada, coll. by G. Mackintosh, 8 Sep 1996 (P. Williams coll.); and 1 spec., 10.6 × 3.5 mm, at 12.8 m, Limekiln Bay, Carriacou, Grenada, coll. by G. Mackintosh, 28 Jun 1998 (BMSM 17969).

Type Locality: Baliceaux Island, St. Vincent and the Grenadines, at 12.2 m depth.

Other Material Examined: 1 spec., 9.3 × 3.4 mm (missing apex), Clifton Harbor, Union I., SVG, coll. by P. Fallon (author's coll.); 1 spec., 10.6 × 3.5 mm, at 3.7 m under rock, Man of War Bay, Tobago I., Trinidad and Tobago, coll. by G. Mackintosh, 2 Nov 1998 (ANSP 424357); 1 spec., 8.9 × 3.0 mm, at 9.1 m, Parlatuvier Bay, Tobago I., Trinidad and Tobago, coll. by G. Mackintosh, 14 Oct 1998 (USNM 1139718); 1 spec., 10.1 × 3.5 mm, at 6.1 m, Pampatar, Margarita I., Venezuela, coll. by G. Mackintosh, 15 Jun 1993 (USNM 1139717).

Distribution: SVG (Bequia I., Baliceaux I., Union I.); Grenada (Grenada I., Glover I., Carriacou I.); Trinidad and Tobago (Tobago I.); and Venezuela (Margarita I.).

Remarks: The genus was erected for fossil species of the Bowden Formation of Jamaica (Woodring, 1928), and although very similar, there are some minor differences from Woodring's description of the genus. The nuclear whorls number 1.75, not 2.5–3.0, although there is some room for difference in interpretation, and the anterior canal appears relatively shorter than those of the fossil specimens placed in this genus. The shell's



Figures 19–22. *Muraclathurella peggywilliamsae* new species. **19.** Holotype, USNM 1139716, Baliceaux I., SVG, 10.3 × 3.6 mm. **20.** Paratype, ANSP 424356, Glover I., Grenada, 9.2 × 3.1 mm. **21.** ANSP 424357, Man of War Bay, Tobago I., Trinidad and Tobago, 10.6 × 3.5 mm. **22.** Same specimen as 21, expanded views of the protoconch.

spindle shape, elongate aperture, prominent varix close to the outer lip, distinct stromboid notch, subsutural cord and other sculptural details support placement here, as they are consistent with his description. The height of this species falls within the range of 6.9–15.5 mm reported for Bowden Formation fossils (Woodring, 1928: 190–191). The largest specimen of *M. peggywilliamsae* examined is 12.6 × 3.8 mm, but is not included in the list of examined specimens above because the locality data has been lost. The only other extant species from the TNWA area (tentatively placed in the *Miraclathurella* by the describer) is *M. clendenini* García, 2008, the largest of which was reported to be 10.1 mm (García, 2008: 11).

Geographic variation is evident in specimens examined. Those from St. Vincent and the Grenadines are light golden yellow, the Grenadian ones a darker golden color (Figure 20), and those from Tobago and Margarita I. mostly brown (Figure 21). The Man of War Bay, Tobago specimen has fewer cords on the body whorl and anterior canal, the spiral sculpture is more pronounced, the beading is slightly larger, the axials better defined, and the elongated beads on the body whorl do not tend to coalesce into a thick cord. The Margarita I. specimen is similar to the holotype in most respects except that it has fewer threads between the cords. Although only minor differences in sculptural detail are present in the specimens from these more distant geographic areas (from the type locality), they have been left out of the type series. However, it is not believed they warrant separation at the specific level because of these differences.

Darrylia kleinrosa (Usticke, 1969) is closest to this but differs in being pink in color, generally smaller, and in lacking a distinctive subsutural cord. It also has a strong denticle at the beginning of the anterior canal that constricts its opening (García, 2008: 10). *Crassispira nigrescens* (C. B. Adams, 1845) has a similar appearance but, most significantly, it has a much shorter aperture and anterior canal, and only a modest varix, compared with the longer anterior canal and thick varix of *M. peggywilliamsae*. Also, the beading on *C. nigrescens* is generally heavier.

Etymology: Named after Peggy Williams because of her passion for tropical western Atlantic turrids and promotion of their greater understanding with her book, *Shallow-Water Turridae of Florida and the Caribbean*, and for recognizing this species as undescribed.

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